APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,013	12/11/2001	Carroll Philip Gossett	16113-384001	2062

26192   7590   02/05/2008
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ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
02/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/015,013	GOSSETT, CARROLL PHILIP
Office Action Summary	Examiner	Art Unit	
	YOUNG T. TSE	2611	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 November 2007 and 13 August 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,2,4-7,10-14,16-21,23-25,30 and 31</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2,4-7,10-14,16-21,23-25,30 and 31</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>13 August 2007</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>20070813</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed August 13, 2007 have been fully considered but they are not persuasive.

Argument: Applicant argues the examiner's rejection of independent claim 20 is procedurally inappropriate. In particular, the examiner did not establish a prima facie § 103 rejection of claim 20; rather, the examiner rejected independent claim 1, 20 and 30 on the same basis, even though the language in these claims is different. More particularly, prior to the current amendments, claims 1 and 30 respectively recited, *inter alia,* "wherein said error coefficients are used for signal processing" and "using said error coefficients in signal processing." In contrast, independent claim 20 recites "processing said error coefficients to retrieve information contained in the spread spectrum signal." In rejecting claims 1, 20 and 30, the examiner merely referred to instances in Li where error coefficients were described in the context of determining or refining the prediction coefficients. The examiner did not indicate where Li discloses or suggests retrieving "information contained in the spread spectrum signal," as recited in claim 20 Accordingly, the § 103 rejection of claim 20 is procedurally inappropriate and should be withdrawn. Procedure aside, Li does not substantively disclose or suggest what is recited by claim 20. In particular, as indicated above, Li describes a system in which error terms are used only to refine predictive coefficients. Such a system teaches away from using the error terms to retrieve information contained in the signal, as

recited in Applicant's claim 20. Accordingly, claim 20 is patentable over Li, and Applicant

requests that the § 103 rejection of claim 20 be withdrawn. Independent claims 1 and

30 have been amended so as to recite similar language with respect to the error

coefficients as claim 20. Applicant further argues claim 11 has been amended to recite

similar language as independent claim 20, which was discussed above. As discussed

with reference to claim 20, Li does not disclose or suggest using error information from

a linear predictive coding filter to recover an information signal. Rather, Li describes

using error information to refine predictive coefficients. Accordingly, Li does anticipate

amended claim 11. Nor does Li render obvious claim 11. As indicated above, Li's

description of using error terms only to refine predictive coefficients actually teaches

away from using the error terms to recover an information signal. Accordingly, claim 11

is patentable over Li, and Applicant requests that the § 103 rejections be withdrawn of

independent claim 11 and of the corresponding dependent claims 13, 14 and 16-19.

Response: The examiner respectfully disagrees. It is well known in

communication systems, including spread spectrum communication systems shown in

figures 1-4 and discussed in the Background of the Invention of the instant application,

wherein a linear predictive coding (LPC) filter 104 is used in a SS-CDMA receiver (Fig.

1), for example, the LPC filter having a gradient adaptive lattice structure filter is shown

in Fig. 2 and having a feedback loop with a FIR filter is shown in Fig. 4 used to filter out

or discard interference periodic and quasi-periodic signals in the band of interest and to

determine linear predictive terms which are critical in modeling speech. Li also

discloses a CDMA communication system in Fig. 4 comprising a RLS lattice adaptive

filter. The detailed block diagram of the RLS lattice adaptive filter is shown in Fig. 6 for

providing forward and backward prediction errors or coefficients to the Viterbi decoder

205 and the QPSK demodulation circuit 206 of a CDMA receiver circuit of Fig. 4.

Inherently, the Viterbi decoder 205 or/and the QPSK demodulation circuit 206 recovers

the information in the received spread spectrum signal, for example, to recover the

original spread spectrum signal transmitted from a CDMA transmitter of the CDMA

communication system, based on the forward and backward prediction errors or

coefficients generated by the RLS lattice adaptive filter. Therefore, independent claim

20 including independent claims 1 and 30 are unpatentable over the conventional prior

art shown in figures 1-4 and discussed in the Background of the Present invention in

view of Li. Regarding independent claim 11, for the same reasons set forth described in

claim 20 above, therefore, independent claim 11 is unpatentable over Li.

Information Disclosure Statement

2.   The information disclosure statement filed August 13, 2007 has been considered

by the examiner. However, documents AQ, AT, ACC and ADD already have been cited

by the examiner in PTO-892 form.

Drawings

3.   The drawings were received on August 13, 2007. These drawings are

acceptable. However, "REPLACEMENT" in each of sheets 1-6 should be labeled

"Replacement Sheet" as required. Corrected drawings in compliance with 37 CFR

1.121(d) are required in reply to the Office action to avoid abandonment of the

application. The replacement sheet(s) should be labeled "Replacement Sheet" in the

page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing

figures. If the changes are not accepted by the examiner, the applicant will be notified

and informed of any required corrective action in the next Office action. The objection to

the drawings will not be held in abeyance.

Specification

4.   The disclosure is objected to because of the following informalities: at page 11,

line 10, "^x(n)" needs to be corrected and at line 19, there should be a space between

"$b_i(n)$" and "have. Appropriate correction is required.

Claim Objections

5.   Claims 1-2, 4-7, 10-14, 16-21, 23-25 and 30-31 are objected to because of the

following informalities:

In claim 11, lines 2 and 8, "signal;" and "said corresponding" should be "signal;

and" and "said", respectively.

In claim 6, "Claim 1 further comprising" should be "Claim 1, wherein the receiver

comprises".

In line 10, line 2, the word "purposes" should be deleted.

The dependent claims 2, 4-5 and 7 are objected to because they dependent from

claim 1.

In claim 11, lines 3-4, "periodic or quasiperiodic" should be "the periodic or quasi-periodic".

The dependent claims 13-14 and 16-19 are objected to because they dependent from claim 11.

In claim 20, lines 4 and 9, "spread spectrum" should be "received spread spectrum" and line 8, "signal;" should be "signal; and".

The dependent claims 21 and 23-25 are objected to because they dependent from claim 20.

In claim 30, line 4, "said spread spectrum" should be "said received spread spectrum"; line 10, "coefficients;" should be "coefficients; and"; and line 11, "the said spread" should be "the received spread".

In claim 31, line 3, "a spread" should be "the spread".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 11, 13-14 and 16-19 are rejected under 35 U.S.C. 102(e) as being

anticipated by Li et al. U.S. Publication No. 2006/0062284 A1 (hereinafter "Li").

Li discloses a method and apparatus for estimating flat fading channel in CDMA

communication system, the method is implemented by using an adaptive forward

prediction technique based on lattice filter and maximum likelihood technique of Viterbi

algorithm.

Fig. 4 shows a block diagram of a detection receiver which employs adaptive

lattice filter-based adaptive forward prediction technique and per-survivor processing

principle based technique and maximum likelihood detection technique of Viterbi

algorithm. See paragraphs [0035] and [0036].

Fig. 6 shows a block diagram of an RLS lattice adaptive filter for performing

estimated values of channel fading coefficients, forward and backward prediction errors.

See paragraphs [0047] and [0050].

Regarding claim 11, in Fig. 6, the RLS lattice adaptive filter filters out

interferences signals corresponding to predictive coefficients and outputs prediction

errors which are used for signal processing, for example, by the Viterbi decoding circuit

205 and the QPSK demodulation circuit 206 of the detection receiver shown in Fig. 4.

Regarding claims 13 and 14, the detection receiver is a CDMA receiver which

also can be used in a frequency hopping spread spectrum communication system.

Regarding claim 17, the RLS lattice adaptive filter is used in a CDMA receiver

system.

Regarding claims 16 and 18-19, the claim subject matter either well known in the

art or used in a standard in compliance with IEEE 802.11(b), as described in the

background of the invention of the instant application.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-2, 4-7, 10, 20-21, 23-25 and 30-31 are rejected under 35 U.S.C. 103(a)

as being unpatentable over the conventional art described in the instant application in

view of Li et al..

Regarding claims 1-2, 10, 20-21 and 30-31, the instant application clearly

describes that in the prior art, the k_m terms are used to model speech. However, note

that there are resulting error terms, $e(n)=fp(n)$ and $bp(n)$, which are also generated as

an output from the LPC filter. In the prior art, these error terms are simply discarded

and not used in any way. However, in the present invention, the error term is kept

whereas the linear predictive terms are discarded. In other words, the $e(n)=fp(n)$ and

$bp(n)$ signals are passed on through the receiver, while the k_m signal is discarded. See

page, 19, lines 10-18. Therefore, all the claim subject matter recited in claims 1, 20, 30

and 31 are well known in the art, except, the predictive error is being used to recover or

retrieve information in the spread spectrum signal.

As described in paragraph 7 above, Li's RLS lattice adaptive filter shown in Fig. 6 is implemented in the detection receiver of Fig. 4 for performing estimated values of channel fading coefficients, forward and backward prediction errors or coefficients. The detailed block diagram of the RLS lattice adaptive filter shown in Fig. 6 for providing forward and backward prediction errors or coefficients is coupled to the Viterbi decoder 205 and the QPSK demodulation circuit 206 of a CDMA receiver circuit of Fig. 4. Inherently, the Viterbi decoder 205 or/and the QPSK demodulation circuit 206 recovers the information in the received spread spectrum signal, for example, to recover the original spread spectrum signal transmitted from a CDMA transmitter of the CDMA communication system, based on the forward and backward prediction errors or coefficients generated by the RLS lattice adaptive filter.

Therefore, it would have been obvious to one of ordinary skill in the art that the prediction error or coefficients generated by a prediction filter is being used for further processing in a prior art receiver as taught by Li, for example, by the Viterbi decoder or/and the QPSK demodulator of the CDMA detection receiver in order to recover the information in the received spread spectrum signal, for instance, to recover the original spread spectrum signal transmitted from a CDMA transmitter of the CDMA communication system, based on the forward and backward prediction errors or coefficients generated by the RLS lattice adaptive filter.

Regarding claims 6 and 25, the detection receiver is a CDMA receiver.

Regarding claim 7, as shown in the prior art Figure 1, clearly, the A/D converter

103 converts the spread spectrum signal received by the antenna 101 into a digital

signal which is directly inputted to the PLC filter 104.

Regarding claims 4-5 and 23-24, the claim subject matter either well known in

the art or used in a standard in compliance with IEEE 802.11(b), as described in the

background of the invention of the instant application.

Conclusion

10.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Gossett et al. relates to a spread spectrum receiver comprising a lattice filter and

an autocorrelation filter, wherein the lattice filter is configured to remove magnitude

distortion from the spread spectrum signal and the autocorrelation filter is configured to

perform a series of correlations on the output of the lattice filter.

Conclusion

11.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

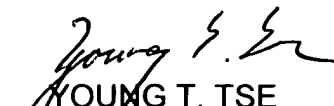than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to YOUNG T. TSE whose telephone number is (571) 272-

3051. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YOUNG T. TSE
Primary Examiner
Art Unit 2611